

501606.108091

AMENDMENTS TO THE CLAIMS**Listing of Claims:**

1. (Original) An air purifying filter media having a dry tensile strength, a wet tensile strength in association with water resistance and water repellency and exhibiting bactericidal/sterilizing or antimicrobial means properties using enzyme reaction, obtained by applying a mixture of the modified enzyme which has an ionic polarity opposite to the ionic polarity of the whole filter media fiber having a functional group and which has sterilizing properties, and an ionic synthetic resin binder having the opposite ionic polarity similar to the modified enzyme, to the whole filter media fiber as described above.
2. (Original) The air purifying filter media according to claim 1, wherein the filter media fiber having the functional group is at least one of a group consisting of inorganic fiber, nature fiber or derivative thereof, organic synthetic fiber having at least one of a group consisting of hydroxyl and carboxyl group having an anionic polarity, and an amino or an imino group having a cationic polarity.
3. (Previously presented) The air purifying filter media according to claim 1, wherein the filter media fiber is at least one fiber having at least one of a group consisting of a hydroxyl and carboxyl group having an anionic polarity, and an amino or an imino group having a cationic polarity, and selecting from a group consisting the inorganic fiber from boron-silica glass fibers, alkyl amine glass fibers, silica-alumina fibers; the nature fiber or derivative thereof selected from non-wood fiber or wood fibers, namely, rayon fibers, cotton fibers, hemp fibers, wool fibers; the organic synthetic fibers selected from polyamide fibers, polyvinyl alcohol fibers, acetate fibers, polyacrylamide fibers or copolymer thereof.
4. (Previously presented) The air purifying filter media according to claim 1, wherein the modified enzyme being immobilized on the functional group of the filter media fiber is at least one modified enzyme modified with at least one compound selected from a group consisting of N-substituted carbamate bromide, N-substituted imide carbonate bromide, acetyl bromide + triacetyl cellulose, dimethylaminoethyl, diethylaminoethyl, protamine, polyethylene imine, polyvinyl amine, polyallyl amine, polylysine, polyornitine, dextran, dextran sulfate, dextrin and chondroitin sulfate.

501606.108091

5. (Previously presented) The air purifying filter media according to claim 1, wherein the to be modified enzyme is at least one selected from a group consisting of β -1,3-glucanase, chitinase, lysozyme, protease, glucosidase, β -galactosidase, endo- β -N-acetylglucosamidase and endolysin.
6. (Previously presented) The air purifying filter media according to claim 1, wherein the ionic synthetic resin binder is at least one selected from a group consisting of acrylic resin, urethane resin, vinyl acetate resin, SBR resin, Epoxy resin, polyvinyl alcohol resin.
7. (Previously presented) The air purifying filter media according to claim 1, wherein the used amount of the modified enzymes is 0.01% by weight or more, based on the weight of the filter media.
8. (Previously presented) The air purifying filter media according to claim 1, wherein the used amount of the ionic synthetic resin binder is 0.1 to 10.0% by weight, based on the weight of the filter media.
9. (Previously presented) The air purifying filter media according to claim 1, wherein the dry tensile strength of the filter media, measured according to MIL-F-51079 C, is 0.45 kN/m or more in a machine direction of the filter media and 0.35 kN/m or more in a cross direction of the filter media.
10. (Previously presented) The air purifying filter media according to claim 1, wherein the wet tensile strength of the filter media, measured according to MIL-F-51079 C, is 0.176 kN/m or more in a cross direction of the filter media.
11. (Previously presented) The air purifying filter media according to claim 1, wherein the water repellency of the filter media comprising the glass fiber as main component, measured according to MIL-282, is 150mm or more (the height of the water column).
12. (Previously presented) The air purifying filter media according to claim 1, wherein the main component of the filter media fiber is selected from the nature fiber or derivative thereof selected from non-wood fiber or wood fibers, namely, rayon fibers, cotton fibers, hemp fibers, wool fibers; the organic synthetic fibers selected from polyamide fibers, polyvinyl alcohol fibers, acetate fibers, polyacrylamide fibers or copolymer thereof, and the water repellency of the filter media, measured according to MIL-282, is 100mm or more (the height of the water column).

501606.108091

13. (Previously presented) The air purifying filter media according to claim 1, wherein the sterilization ratio is 99.9% or more.
14. (Previously presented) The air purifying filter media according to claim 1, wherein other than the modified enzyme and the ionic synthetic resin binder, the water repellent agent is additionally applied.
15. (Previously presented) The air purifying filter media according to claim 14, wherein the applied amount of the water repellent agent is 0.1% by weight or less, based on the filter media.
16. (Previously presented) The air purifying filter media according to claim 1, wherein in addition to the ionic synthetic resin binder an internal fibrous binder is used.
17. (Previously presented) A process for the preparation of the air purifying filter media according to claim 1, wherein, after preparation of a slurry containing the filter media fiber having the functional group, to a wet paper web produced from the slurry under dehydration by using a wet-type paper machine or a dried paper thereof, the modified enzyme and an ionic synthetic resin binder and, if desired, the water repellent agent is applied.
18. (Original) The process according to claim 17, wherein the wet paper web applied the modified enzyme and the ionic synthetic resin binder and, if desired, the water repellent agent or the dry paper is dried at a temperature between 80°C to 220°C.
19. (Previously presented) The air purifying filter media according to claim 2, wherein the filter media fiber is at least one fiber having at least one of a group consisting of a hydroxyl and carboxyl group having an anionic polarity, and an amino or an imino group having a cationic polarity, and selecting from a group consisting the inorganic fiber from boron-silica glass fibers, alkyl amine glass fibers, silica-alumina fibers; the nature fiber or derivative thereof selected from non-wood fiber or wood fibers, namely, rayon fibers, cotton fibers, hemp fibers, wool fibers; the organic synthetic fibers selected from polyamide fibers, polyvinyl alcohol fibers, acetate fibers, polyacrylamide fibers or copolymer thereof.

501606.108091

20. (Previously presented) The air purifying filter media according to claim 2, wherein the modified enzyme being immobilized on the functional group of the filter media fiber is at least one modified enzyme modified with at least one compound selected from a group consisting of N-substituted carbamate bromide, N-substituted imide carbonate bromide, acetyl bromide + triacetyl cellulose, dimethylaminoethyl, diethylaminoethyl, protamine, polyethylene imine, polyvinyl amine, polyallyl amine, polylysine, polyornitine, dextran, dextran sulfate, dextrin and chondroitin sulfate.

21. (Previously presented) The air purifying filter media according to claim 2, wherein the to be modified enzyme is at least one selected from a group consisting of β -1,3-glucanase, chitinase, lysozyme, protease, glucosidase, β -galactosidase, endo- β -N-acetylglucosamidase and endolysin.

22. (Previously presented) The air purifying filter media according to claim 4, wherein the to be modified enzyme is at least one selected from a group consisting of β -1,3-glucanase, chitinase, lysozyme, protease, glucosidase, β -galactosidase, endo- β -N-acetylglucosamidase and endolysin.

23. (Previously presented) The air purifying filter media according to claim 2, wherein the ionic synthetic resin binder is at least one selected from a group consisting of acrylic resin, urethane resin, vinyl acetate resin, SBR resin, Epoxy resin, polyvinyl alcohol resin.

24. (Previously presented) The air purifying filter media according to claim 3, wherein the ionic synthetic resin binder is at least one selected from a group consisting of acrylic resin, urethane resin, vinyl acetate resin, SBR resin, Epoxy resin, polyvinyl alcohol resin.

25. (Previously presented) The air purifying filter media according to claim 4, wherein the ionic synthetic resin binder is at least one selected from a group consisting of acrylic resin, urethane resin, vinyl acetate resin, SBR resin, Epoxy resin, polyvinyl alcohol resin.

26. (Previously presented) The air purifying filter media according to claim 5, wherein the ionic synthetic resin binder is at least one selected from a group consisting of acrylic resin, urethane resin, vinyl acetate resin, SBR resin, Epoxy resin, polyvinyl alcohol resin.

27. (Previously presented) The air purifying filter media according to claim 2, wherein the used amount of the modified enzymes is 0.01% by weight or more, based on the weight of the

501606.108091

filter media.

28. (Previously presented) The air purifying filter media according to claim 4, wherein the used amount of the modified enzymes is 0.01% by weight or more, based on the weight of the filter media.

29. (Previously presented) The air purifying filter media according to claim 5, wherein the used amount of the modified enzymes is 0.01% by weight or more, based on the weight of the filter media.

30. (Previously presented) The air purifying filter media according to claim 2, wherein the used amount of the ionic synthetic resin binder is 0.1 to 10.0% by weight, based on the weight of the filter media.

31. (Previously presented) The air purifying filter media according to claim 6, wherein the used amount of the ionic synthetic resin binder is 0.1 to 10.0% by weight, based on the weight of the filter media.

32. (Previously presented) The air purifying filter media according to claim 7, wherein the used amount of the ionic synthetic resin binder is 0.1 to 10.0% by weight, based on the weight of the filter media.

33. (Previously presented) The air purifying filter media according to claim 2, wherein the dry tensile strength of the filter media, measured according to MIL-F-51079 C, is 0.45 kN/m or more in a machine direction of the filter media and 0.35 kN/m or more in a cross direction of the filter media.

34. (Previously presented) The air purifying filter media according to claim 8, wherein the dry tensile strength of the filter media, measured according to MIL-F-51079 C, is 0.45 kN/m or more in a machine direction of the filter media and 0.35 kN/m or more in a cross direction of the filter media.

35. (Previously presented) The air purifying filter media according to claim 32, wherein the dry tensile strength of the filter media, measured according to MIL-F-51079 C, is 0.45 kN/m or more in a machine direction of the filter media and 0.35 kN/m or more in a cross direction of the filter media.

501606.108091

36. (Previously presented) The air purifying filter media according to claim 2, wherein the wet tensile strength of the filter media, measured according to MIL-F-51079 C, is 0.176 kN/m or more in a cross direction of the filter media.

37. (Previously presented) The air purifying filter media according to claim 6, wherein the wet tensile strength of the filter media, measured according to MIL-F-51079 C, is 0.176 kN/m or more in a cross direction of the filter media.

38. (Previously presented) The air purifying filter media according to claim 8, wherein the wet tensile strength of the filter media, measured according to MIL-F-51079 C, is 0.176 kN/m or more in a cross direction of the filter media.

39. (Previously presented) The air purifying filter media according to claim 32, wherein the wet tensile strength of the filter media, measured according to MIL-F-51079 C, is 0.176 kN/m or more in a cross direction of the filter media.

40. (Previously presented) The air purifying filter media according to claim 2, wherein the water repellency of the filter media comprising the glass fiber as main component, measured according to MIL-282, is 150mm or more (the height of the water column).

41. (Previously presented) The air purifying filter media according to claim 4, wherein the water repellency of the filter media comprising the glass fiber as main component, measured according to MIL-282, is 150mm or more (the height of the water column).

42. (Previously presented) The air purifying filter media according to claim 5, wherein the water repellency of the filter media comprising the glass fiber as main component, measured according to MIL-282, is 150mm or more (the height of the water column).

43. (Previously presented) The air purifying filter media according to claim 8, wherein the water repellency of the filter media comprising the glass fiber as main component, measured according to MIL-282, is 150mm or more (the height of the water column).

44. (Previously presented) The air purifying filter media according to claim 32, wherein the water repellency of the filter media comprising the glass fiber as main component, measured according to MIL-282, is 150mm or more (the height of the water column).

501606.108091

45. (Previously presented) The air purifying filter media according to claim 2, wherein the main component of the filter media fiber is selected from the nature fiber or derivative thereof selected from non-wood fiber or wood fibers, namely, rayon fibers, cotton fibers, hemp fibers, wool fibers; the organic synthetic fibers selected from polyamide fibers, polyvinyl alcohol fibers, acetate fibers, polyacrylamide fibers or copolymer thereof, and the water repellency of the filter media, measured according to MIL-282, is 100mm or more (the height of the water column).

46. (Previously presented) The air purifying filter media according to claim 4, wherein the main component of the filter media fiber is selected from the nature fiber or derivative thereof selected from non-wood fiber or wood fibers, namely, rayon fibers, cotton fibers, hemp fibers, wool fibers; the organic synthetic fibers selected from polyamide fibers, polyvinyl alcohol fibers, acetate fibers, polyacrylamide fibers or copolymer thereof, and the water repellency of the filter media, measured according to MIL-282, is 100mm or more (the height of the water column).

47. (Previously presented) The air purifying filter media according to claim 5, wherein the main component of the filter media fiber is selected from the nature fiber or derivative thereof selected from non-wood fiber or wood fibers, namely, rayon fibers, cotton fibers, hemp fibers, wool fibers; the organic synthetic fibers selected from polyamide fibers, polyvinyl alcohol fibers, acetate fibers, polyacrylamide fibers or copolymer thereof, and the water repellency of the filter media, measured according to MIL-282, is 100mm or more (the height of the water column).

48. (Previously presented) The air purifying filter media according to claim 8, wherein the main component of the filter media fiber is selected from the nature fiber or derivative thereof selected from non-wood fiber or wood fibers, namely, rayon fibers, cotton fibers, hemp fibers, wool fibers; the organic synthetic fibers selected from polyamide fibers, polyvinyl alcohol fibers, acetate fibers, polyacrylamide fibers or copolymer thereof, and the water repellency of the filter media, measured according to MIL-282, is 100mm or more (the height of the water column).

49. (Previously presented) The air purifying filter media according to claim 32, wherein the main component of the filter media fiber is selected from the nature fiber or derivative thereof selected from non-wood fiber or wood fibers, namely, rayon fibers, cotton fibers, hemp fibers, wool fibers; the organic synthetic fibers selected from polyamide fibers, polyvinyl alcohol fibers, acetate fibers, polyacrylamide fibers or copolymer thereof, and the water repellency of the filter media, measured according to MIL-282, is 100mm or more (the height of the water column).

501606.108091

50. (Previously presented) The air purifying filter media according to claim 2, wherein the sterilization ratio is 99.9% or more.
51. (Previously presented) The air purifying filter media according to claim 4, wherein the sterilization ratio is 99.9% or more.
52. (Previously presented) The air purifying filter media according to claim 5, wherein the sterilization ratio is 99.9% or more.
53. (Previously presented) The air purifying filter media according to claim 6, wherein the sterilization ratio is 99.9% or more.
54. (Previously presented) The air purifying filter media according to claim 7, wherein the sterilization ratio is 99.9% or more.
55. (Previously presented) The air purifying filter media according to claim 8, wherein the sterilization ratio is 99.9% or more.
56. (Previously presented) The air purifying filter media according to claim 32, wherein the sterilization ratio is 99.9% or more.
57. (Previously presented) The air purifying filter media according to claim 2, wherein other than the modified enzyme and the ionic synthetic resin binder, the water repellent agent is additionally applied.
58. (Previously presented) The air purifying filter media according to claim 2, wherein the applied amount of the water repellent agent is 0.1% by weight or less, based on the filter media.
59. Cancelled.
60. (Previously presented) The air purifying filter media according to one from claim 2, wherein in addition to the ionic synthetic resin binder an internal fibrous binder is used.
61. (Previously presented) The air purifying filter media according to one from claim 9, wherein in addition to the ionic synthetic resin binder an internal fibrous binder is used.

501606.108091

62. (Previously presented) The air purifying filter media according to one from claim 10, wherein in addition to the ionic synthetic resin binder an internal fibrous binder is used.

63. (Previously presented) A process for the preparation of the air purifying filter media according to claim 2, wherein, after preparation of a slurry containing the filter media fiber having the functional group, to a wet paper web produced from the slurry under dehydration by using a wet-type paper machine or a dried paper thereof, the modified enzyme and an ionic synthetic resin binder and, if desired, the water repellent agent is applied.

64. (Previously presented) A process for the preparation of the air purifying filter media according to claim 3, wherein, after preparation of a slurry containing the filter media fiber having the functional group, to a wet paper web produced from the slurry under dehydration by using a wet-type paper machine or a dried paper thereof, the modified enzyme and an ionic synthetic resin binder and, if desired, the water repellent agent is applied.

65. (Previously presented) A process for the preparation of the air purifying filter media according to claim 4, wherein, after preparation of a slurry containing the filter media fiber having the functional group, to a wet paper web produced from the slurry under dehydration by using a wet-type paper machine or a dried paper thereof, the modified enzyme and an ionic synthetic resin binder and, if desired, the water repellent agent is applied.

66. (Previously presented) A process for the preparation of the air purifying filter media according to claim 5, wherein, after preparation of a slurry containing the filter media fiber having the functional group, to a wet paper web produced from the slurry under dehydration by using a wet-type paper machine or a dried paper thereof, the modified enzyme and an ionic synthetic resin binder and, if desired, the water repellent agent is applied.

67. (Previously presented) A process for the preparation of the air purifying filter media according to claim 6, wherein, after preparation of a slurry containing the filter media fiber having the functional group, to a wet paper web produced from the slurry under dehydration by using a wet-type paper machine or a dried paper thereof, the modified enzyme and an ionic synthetic resin binder and, if desired, the water repellent agent is applied.

68. (Previously presented) A process for the preparation of the air purifying filter media according to claim 14, wherein, after preparation of a slurry containing the filter media fiber having the functional group, to a wet paper web produced from the slurry under dehydration by

501606.108091

using a wet-type paper machine or a dried paper thereof, the modified enzyme and an ionic synthetic resin binder and, if desired, the water repellent agent is applied.

69. (Previously presented) A process for the preparation of the air purifying filter media according to claim 16, wherein, after preparation of a slurry containing the filter media fiber having the functional group, to a wet paper web produced from the slurry under dehydration by using a wet-type paper machine or a dried paper thereof, the modified enzyme and an ionic synthetic resin binder and, if desired, the water repellent agent is applied.